New Jersey

Although New Jersey has only the ninth largest population, it is the most densely populated State in the Nation due to its size. Also reflecting on its relatively small area is the fact that, even though emissions of sulfur dioxide (SO_2), nitrogen oxides (NO_x) and carbon dioxide (CO_2) from New Jersey electricity generation are lower than most States, the concentration rankings per square mile of NO_x and CO_2 are among the top 10 in the United States. Atlantic City Electric's B L England plant was among the plants which were named to begin compliance with the stricter emissions standards for SO_2 set forth in the Clean Air Act Amendments of 1990 (CAAA90). In addition, New Jersey is one of the 13 States represented on the Ozone Transport Commission, which was created by CAAA90 to coordinate the regional development of control plans for ground-level ozone in the Northeast and Mid-Atlantic States.[1] It is likely that New Jersey will need to design a State implementation plan for reducing ground-level ozone in response to a proposal released by the Environmental Protection Agency (EPA) in October 1998. The EPA proposal does not mandate which sources must reduce pollution. However, EPA states that utilities would be one of the most likely sources of NO_x emissions reductions.

Most of the utility electricity in New Jersey is generated at nuclear plants. Two of the three largest plants in the State are nuclear plants (Salem and Hope Creek) and are located in the southernmost part of the State along the mouth of the Delaware River. In 1986, nuclear units represented 50.1 percent of its net generation but in 1996 the nuclear share dropped to 29.3 percent. This sharp decline was the result of Public Service Electric and Gas Company (PSE&G) voluntarily taking the Salem plant out of service in the Spring of 1995 after a series of problems with personnel and equipment.[2] Since that time, PSE&G has spent several hundred million dollars to refurbish the plant. Its Unit 2 was brought back on line in the Fall of 1998 and Unit 1 is expected to be back on line in late 1998.[3]

A noteworthy fact regarding New Jersey's electricity generation is the rapid growth in nonutility generation. In 1986, nonutility generation accounted for 2.4 percent of the State's total but, by 1996, this figure had climbed to 47.5 percent. Only Rhode Island (58.6 percent) and Maine (48.5 percent) had larger shares of electricity generated by nonutilities.

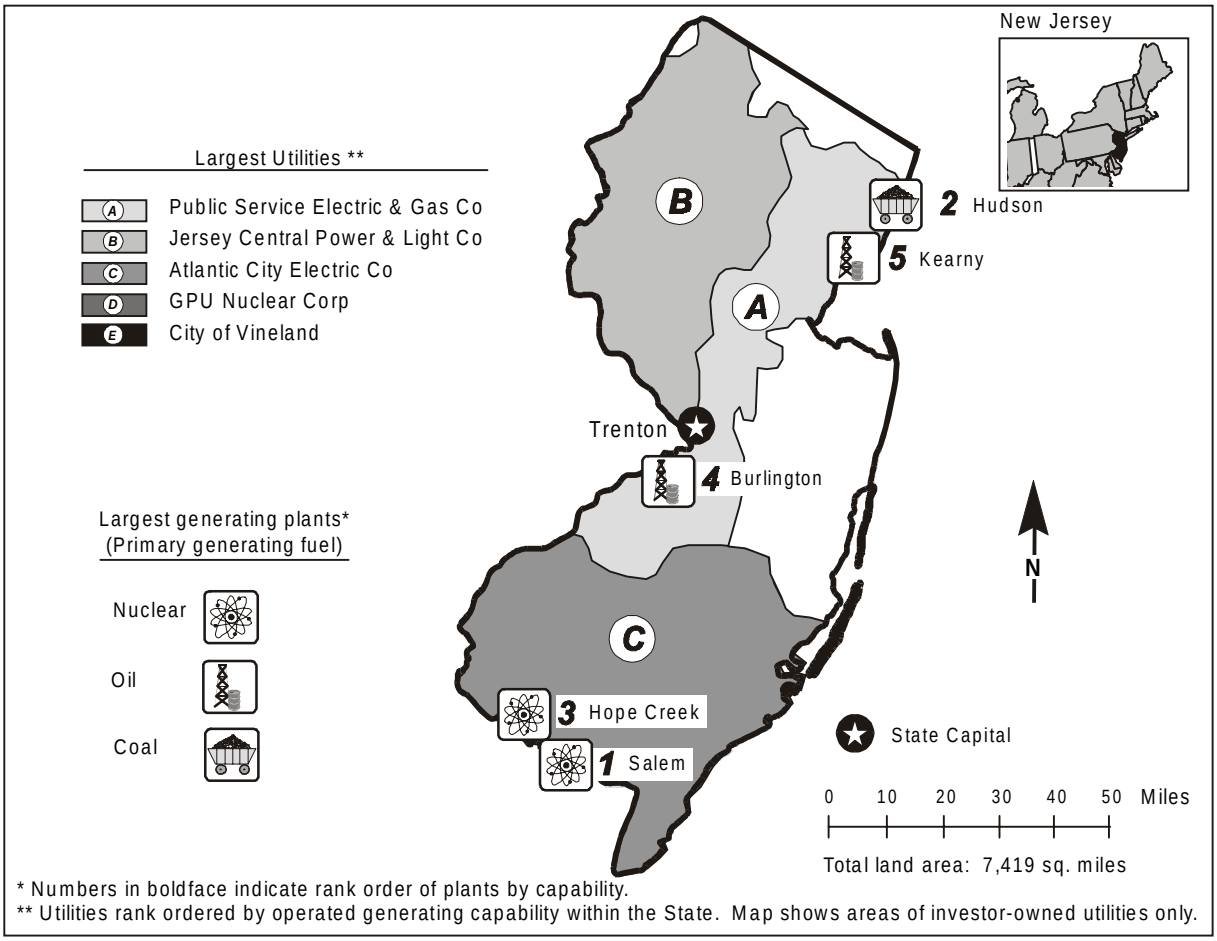
Another significant factor in New Jersey is the average price of electricity. At 10.50 cents per kilowatthour, it ranks fifth most expensive in the Nation. These high prices were one of the forces behind New Jersey's aggressive approach to restructuring. While the legislative session that ended in June 1998 failed to pass restructuring legislation, a bill supported by the governor and the State's investor-owned utilities, the Electric Discount and Energy Competition Act, was introduced in September 1998. If passed, it would begin a 4-month phase-in for customer choice by June 1999; open up metering and billing to competition after 1 year; implement rate reductions of 5 to 10 percent within 4 months; unbundle rates; require disclosure of emissions and fuel mix; and give the Board of Public Utilities authority to determine the amount of stranded costs and recovery mechanisms, including securitization. The pilot program, which was begun in September 1997 by Jersey Central Power & Light for customers in Monroe Township, was extended through December 31, 1998. New Jersey Assembly and Senate committees are expected to vote on the restructuring legislation in early 1999.[4]

[1] The Ozone Transport Region comprises the States of Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, New York, New Jersey, Pennsylvania, Maryland, Delaware, the northern counties of Virginia, and the District of Columbia.

[2] http://www.bergenrecord.com/region/nuke13199802135.htm.

[3] http://www.nj.com/business/ledger/stories/543cld.htm.

[4] Energy Information Administration, Status of State Electric Utility Deregulation Activity, http://www.eia.doe.gov/cneaf/electricity/chg_str/tab5rev.html.



* Numbers in boldface indicate rank order of plants by capability.
** Utilities rank ordered by operated generating capability within the State. Map shows areas of investor-owned utilities only.

Table 1. 1996 Summary Statistics

Item	Value	U.S. Rank
NERC Region(s)		MACC
Net Exporter or Importer		Importer
State Primary Generating Fuel		Nuclear
Population (as of 7/96)	8,001,850	9
Average Revenue (cents/kWh)	10.50	[a]47
Industry		
Capability (MWe)	16,828	[b]18
Generation (MWh)	37,663,185	[b]28
Capability/person (KWe/person)	2.10	[b]37
Generation/person (MWh/person)	4.71	[b]44
Sulfur Dioxide Emissions (Thousand Short Tons)	47	38
Nitrogen Oxide Emissions (Thousand Short Tons)	72	35
Carbon Dioxide Emissions (Thousand Short Tons)	21,727	36
Sulfur Dioxide/sq. mile (Tons)	6.29	20
Nitrogen Oxides/sq. mile (Tons)	9.77	7
Carbon Dioxide/sq. mile (Tons)	2,928.62	8

Item	Value	U.S. Rank
Utility		
Capability (MWe)	13,645	22
Generation (MWh)	19,790,697	40
Average Age of Coal Plants	32 years	
Average Age of Oil-fired Plants	32 years	
Average Age of Gas-fired Plants	28 years	
Average Age of Nuclear Plants	16 years	
Average Age of Hydroelectric Plants	31 years	
Average Age of Other Plants	--	
Nonutility[c]		
Capability (MWe)	3,183	6
Percentage Share of Capability	18.9	5
Generation (MWh)	17,872,488	6
Percentage Share of Generation	47.5	3

-- = Not applicable.

Table 2. Five Largest Utility Plants, 1996

Plant Name	Type	Operating Utility	Net Capability (MWe)
1. Salem	Nuclear	Public Service Electric&Gas Co	2,250
2. Hudson	Coal/Gas/Oil	Public Service Electric&Gas Co	1,112
3. Hope Creek	Nuclear	Public Service Electric&Gas Co	1,031
4. Burlington	Oil/Gas	Public Service Electric&Gas Co	809
5. Kearny	Oil/Gas	Public Service Electric&Gas Co	796

Table 3. Top Five Utilities with Largest Generating Capability, and Type, Within the State, 1996
(Megawatts Electric)

Utility	Net Summer Capability	Net Coal Capability	Net Oil Capability	Net Gas Capability	Net Nuclear Capability	Net Hydro/Other Capability
A. Public Service Electric & Gas Co	9,926	1,242	2,139	3,302	3,243	--
B. Jersey Central Power & Light Co	1,820	--	212	1,208	--	400
C. Atlantic City Electric Co	1,188	364	422	402	--	--
D. GPU Nuclear Corp	619	--	--	--	619	--
E. City of Vineland	92	23	69	--	--	--
Total	13,645	1,629	2,842	4,912	3,862	400
Percentage of Industry Capability	81.1	--	--	--	--	--

-- = Not applicable.

Figure 1. Utility Generating Capability by Primary Energy Source, 1996

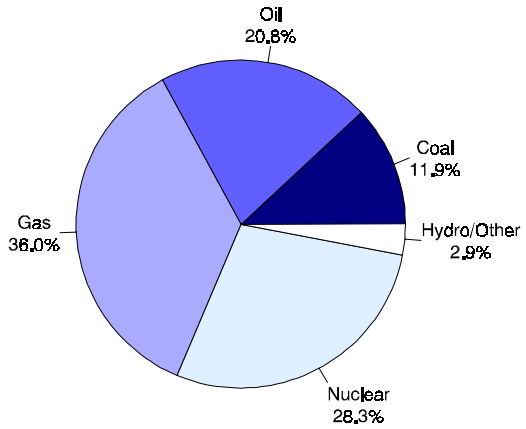


Figure 2. Utility Generation by Primary Energy Source, 1996

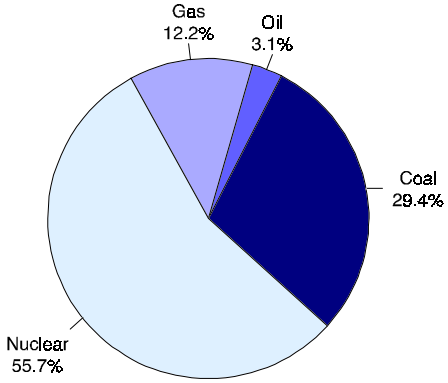


Figure 3. Energy Consumed at Electric Utilities by Primary Energy Source, 1996

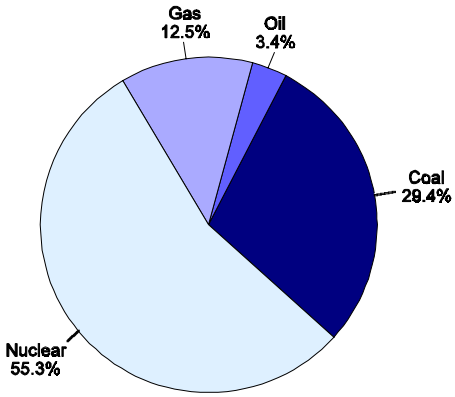


Table 4. Electric Power Industry Generating Capability by Primary Energy Source, 1986, 1991, and 1996
(Megawatts Electric)

Fuel	1986	1991	1996	Percentage Share 1986	Percentage Share 1991	Percentage Share 1996
Coal	1,652	1,652	1,629	12.1	11.1	9.7
Oil	3,922	3,360	2,842	28.7	22.5	16.9
Gas	3,728	4,530	4,912	27.3	30.4	29.2
Nuclear	3,885	3,853	3,862	28.5	25.8	22.9
Hydro/Other	330	330	400	2.4	2.2	2.4
Total Utility	13,517	13,725	13,645	99.0	92.0	81.1
Total Nonutility	137	1,188	3,183	1.0	8.0	18.9
Industry	13,654	14,913	16,828	100.0	100.0	100.0

Table 5. Electric Power Industry Generation of Electricity by Primary Energy Source, 1986, 1991, and 1996
(Thousand Kilowatthours)

Fuel	1986	1991	1996	Percentage Share 1986	Percentage Share 1991	Percentage Share 1996
Coal	6,287,682	5,237,132	5,826,375	21.3	12.1	15.5
Oil	4,952,983	1,798,775	611,361	16.8	4.2	1.6
Gas	3,060,622	5,341,636	2,439,308	10.4	12.3	6.5
Nuclear	14,770,208	24,806,606	11,027,886	50.1	57.3	29.3
Hydro/Other	-289,234	-155,184	-114,233	-1.0	-0.4	-0.3
Total Utility	28,782,260	37,028,965	19,790,697	97.6	85.5	52.5
Total Nonutility	698,866	6,275,746	17,872,488	2.4	14.5	47.5
Industry	29,481,126	43,304,711	37,663,185	100.0	100.0	100.0

Table 6. Electric Power Industry Consumption by Primary Energy Source, 1986, 1991, and 1996
(Quadrillion Btu)

Fuel	1986	1991	1996	Percentage Share 1986	Percentage Share 1991	Percentage Share 1996
Coal	0.069	0.056	0.062	18.1	11.6	14.9
Oil	0.057	0.020	0.007	14.8	4.2	1.7
Gas	0.038	0.064	0.026	10.0	13.3	6.3
Nuclear	0.160	0.266	0.117	41.7	55.5	28.0
Hydro/Other	-0.003	-0.002	-0.001	-0.8	-0.3	-0.3
Total Utility	0.321	0.405	0.212	83.9	84.2	50.6
Total Nonutility	0.062	0.076	0.207	16.1	15.8	49.4
Industry	0.382	0.480	0.419	100.0	100.0	100.0

Figure 4. Utility Generation of Electricity by Primary Energy Source, 1986-1996

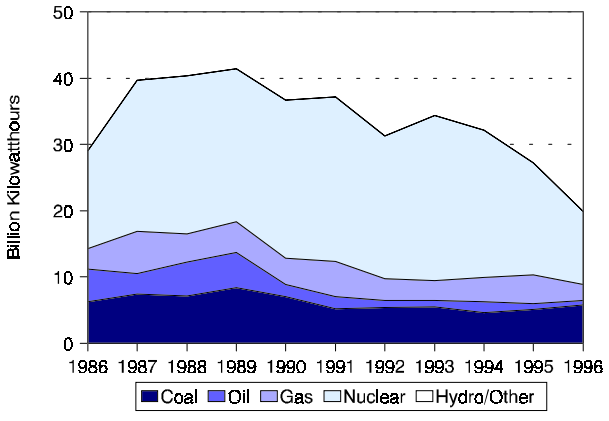


Figure 5. Utility Delivered Fuel Prices for Coal, Oil, and Gas, 1986-1996
(1996 Dollars)

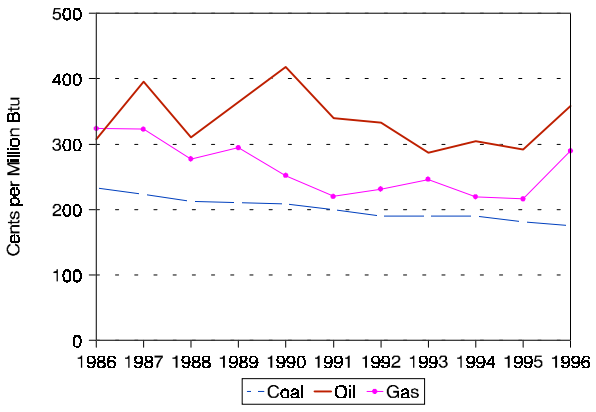


Table 7. Utility Delivered Fuel Prices for Coal, Oil, and Gas, 1986, 1991, and 1996
(Cents per Million Btu, 1996 Dollars)

Fuel	1986	1991	1996	Annual Growth Rate 1986-1996 (Percent)
Coal	233.4	200.3	175.2	-2.8
Oil	307.3	339.5	358.7	1.6
Gas	323.8	219.9	289.8	-1.1

Table 8. Electric Power Industry Emissions Estimates, 1986, 1991, and 1996
(Thousand Short Tons)

Emission Type	1986	1991	1996	Annual Growth Rate 1986-1996 (Percent)
Sulfur Dioxide	84	67	47	-5.7
Nitrogen Oxides[d] . .	55	55	72	2.8
Carbon Dioxide[d] . . .	14,124	16,940	21,727	4.4

Figure 6. Estimated Sulfur Dioxide Emissions, 1986-1996

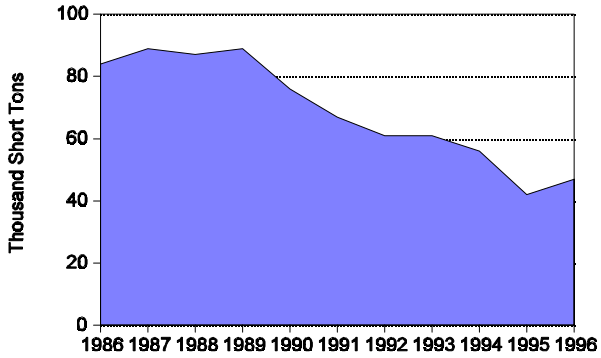


Figure 7. Estimated Nitrogen Oxide Emissions, 1986-1996

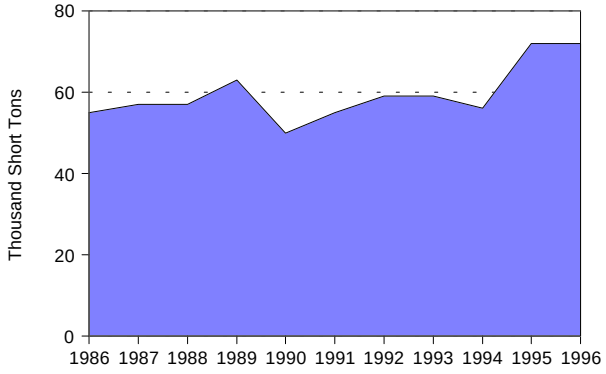


Figure 8. Estimated Carbon Dioxide Emissions, 1986-1996

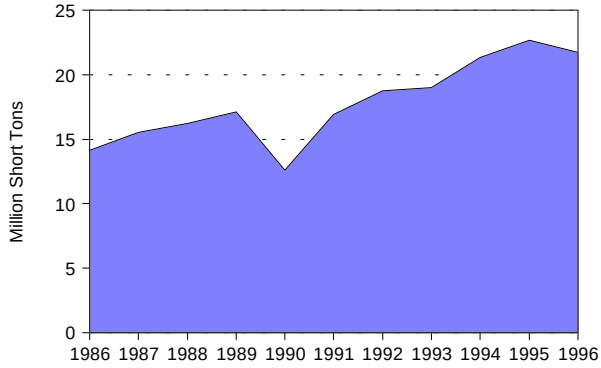


Table 9. Utility Retail Sales by Sector, 1986, 1991, and 1996
(Megawatthours)

Sector	1986	1991	1996	Annual Growth Rate 1986-1996 (Percent)	Percentage Share 1986	Percentage Share 1991	Percentage Share 1996
Residential . .	18,088,869	21,539,103	22,632,226	2.3	32.3	33.3	33.8
Commercial	21,805,435	27,627,097	30,152,284	3.3	38.9	42.7	45.1
Industrial . . .	15,630,557	15,031,232	13,602,503	-1.4	27.9	23.2	20.3
Other	467,687	485,119	502,417	0.7	0.8	0.7	0.8
Total	55,992,548	64,682,551	66,889,430	1.8	100.0	100.0	100.0

Figure 9. Nuclear Power Capacity Factor Comparison, 1986-1996

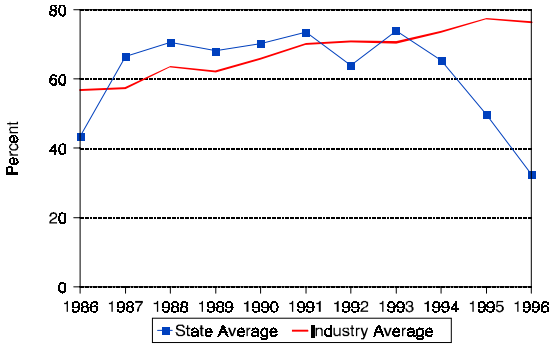


Table 10. Utility Retail Sales Statistics, 1986, 1991, and 1996

Item	Investor-Owned Utility	Public	Federal	Cooperative	Total
			1986		
Number of Utilities	4	9	--	1	14
Number of Retail Customers	3,030,371	45,282	--	8,846	3,084,499
Retail Sales (MWh)	55,216,073	687,542	--	88,933	55,992,548
Percentage of Retail Sales	98.6	1.2	--	0.2	100.0
Revenue from Retail Sales (thousand 1996 $)[e]	6,686,358	78,295	--	13,494	6,778,146
Percentage of Revenue	98.7	1.2	--	0.2	100.0
			1991		
Number of Utilities	4	9	--	1	14
Number of Retail Customers	3,261,904	51,159	--	9,802	3,322,865
Retail Sales (MWh)	63,766,817	814,155	--	101,579	64,682,551
Percentage of Retail Sales	98.6	1.3	--	0.2	100.0
Revenue from Retail Sales (thousand 1996 $)[e]	6,778,895	86,247	--	13,353	6,878,494
Percentage of Revenue	98.6	1.3	--	0.2	100.0
			1996		
Number of Utilities	4	9	--	1	14
Number of Retail Customers	3,373,195	53,546	--	10,408	3,437,149
Retail Sales (MWh)	65,912,025	864,669	--	112,736	66,889,430
Percentage of Retail Sales	98.5	1.3	--	0.2	100.0
Revenue from Retail Sales (thousand 1996 $)[e]	6,934,345	78,614	--	13,455	7,026,414
Percentage of Revenue	98.7	1.1	--	0.2	100.0

-- = Not applicable.